

October 10, 2006

FINDING OF NO SIGNIFICANT IMPACT

TO ALL INTERESTED GOVERNMENTAL AGENCIES AND PUBLIC GROUPS

As required by state and federal rules for determining whether an Environmental Impact Statement is necessary, an environmental review has been performed on the proposed action below:

Project	Billings Briarwood Sewer Main Extension
Location	Billings, Montana
Project Number	C301206-01
Total Cost	\$4,780,000

The City of Billings has identified the need to extend wastewater mains to serve the South Hills area. The Briarwood Sewer Main Extension project consists of the extension of the existing City of Billings sanitary sewer system to the south side of the Yellowstone River into the area commonly identified as the South Hills area. The South Hills Service Area (service area) is approximately 3,000 acres in size, and includes the Cedar Park and Briarwood subdivisions, which are already within the Billings city limits, and numerous other outlying subdivisions; including the Quanta, Bolinger, Aqui-Esta, Blain's Trailer Court, and Blue Creek Acreage subdivisions which will be annexed into the city eventually. The South Hills Trunk Sewer Main was identified in the South Hills Planning study completed in April 2004. The service area at that time included approximately 1,300 acres. The City of Billings added an additional 1,700 acres based credible interest in development of the area and problems with some on-site systems and high groundwater. The service area includes many other parcels of subdivided land, including numerous residential and a few commercial lots. The current population of the Briarwood Subdivision is just over 1,000 people. The population in the service area is approximately 2,000 and is projected to reach 12,000 people when the area is fully developed. The proposed sewer main extension will serve the Briarwood Subdivision after construction is complete. No other homes are scheduled to connect to the sewer main in the immediate future.

The Cedar Park and Briarwood subdivisions of the South Hills area were recently annexed into the City of Billings. At that time, the City assumed responsibility for the existing wastewater treatment facility (WWTF) at Briarwood. Due to the age and condition of the WWTF, it was determined that conveyance of the sewage to the City system would be the most beneficial option for the City. Additionally, as the South Hills area develops, the proposed sewer line will enable the new areas to be served with City of Billings water and sewer. The City water system was extended into the area in 2004. When the South Hills area is fully developed, the projected wastewater flow will be 1,200,000 gallons per day. The City's main wastewater treatment facility has capacity of 26 million gallons per day. The South Hills wastewater flow will be approximately 5% of the main wastewater treatment facilities capacity.

The proposed sanitary sewer extension will extend from the existing City system near the intersection of South Billings Boulevard and the Frontage Road to the Briarwood wastewater treatment facility located near the entrance to the Briarwood Subdivision, a distance of approximately 14,300 feet. Approximately 7,260 linear feet of 18-inch diameter and 2,940 linear feet of 15-inch diameter "gravity flow" piping will be constructed from the Briarwood wastewater

treatment facility to a new lift station that will be located near the existing City of Billings water booster station along Blue Creek Road. The lift station will pump wastewater approximately 7,400 feet to the existing City system in two 12-inch diameter “force main” pipes (a total of 14,800 linear feet of 12-inch piping). The force main will be connected to the underside of the existing bridge deck to cross the Yellowstone River. When above ground, the force main will be insulated to protect against freezing. The sewer main will be located within the Montana Department of Highway right-of-way and within permanent easements obtained from landowners. Additionally, some construction will require temporary construction easements from landowners. Acquisition of easements from eleven landowners will be required for construction of the sewer main. Approval to attach the sewer main to the underside of the bridge will come from the Montana Department of Highways. The new sewer system will be designed to meet state standards.

The State Revolving Fund loan program will provide partial funding for the project. Environmentally sensitive characteristics such as wetlands, floodplains, threatened or endangered species, and historical sites are not expected to be adversely impacted as a result of the proposed project. Public participation during the planning process generally demonstrated support for the selected alternative. No significant long-term environmental impacts were identified. An environmental assessment, which describes the project and analyzes the impacts in more detail, is attached to this Finding of No Significant Impact.

These documents are available for public scrutiny at the following locations:

Department of Environmental Quality
1520 East Sixth Avenue
P.O. Box 200901
Helena, MT 59620-0901

City of Billings
Public Works Department
510 N. Broadway, 4th Floor
Billings, MT 59101

Comments supporting or disagreeing with this decision may be submitted for consideration by the Department of Environmental Quality. After evaluating the comments received, the agency will make a final decision. However, no administrative action will be taken on the project for at least 30 calendar days after release of the Finding of No Significant Impact.

Sincerely,

Todd Teegarden, Bureau Chief
Technical and Financial Assistance Bureau
Planning, Prevention & Assistance Division

BIILLINGS BRIARWOOD SEWER MAIN EXTENSION
ENVIRONMENTAL ASSESSMENT

I. COVER SHEET

A. PROJECT IDENTIFICATION

Applicant: City of Billings

Address: Public Works Department
510 N. Broadway
Billings, MT 59101

Project Number: C301206-01

B. CONTACT PERSON

Name: Vern Heilser P.E.

Address: Public Works Department
510 N. Broadway
Billings, MT 59101

Telephone: (406) 657-8230

C. ABSTRACT

The City of Billings has identified the need to extend wastewater mains to serve the South Hills area. The Briarwood Sewer Main Extension project consists of the extension of the existing City of Billings sanitary sewer system to the south side of the Yellowstone River into the area commonly identified as the South Hills area. The South Hills Service Area (service area) is approximately 3,000 acres in size, and includes the Cedar Park and Briarwood subdivisions, which are already within the Billings city limits, and numerous other outlying subdivisions; including the Quanta, Bolinger, Aqui-Esta, Blain's Trailer Court, and Blue Creek Acreage subdivisions which will be annexed into the city eventually. The South Hills Trunk Sewer Main was identified in the South Hills Planning study completed in April 2004. The service area at that time included approximately 1,300 acres. The City of Billings added an additional 1,700 acres based credible interest in development of the area and problems with some on-site systems and high groundwater. The service area includes many other parcels of subdivided land, including numerous residential and a few commercial lots. The current population of the Briarwood Subdivision is just over 1,000 people. The population in the service area is approximately 2,000 and is projected to reach 12,000 people when the area is fully developed. The proposed sewer main extension will serve the Briarwood Subdivision after construction is complete. No other homes are scheduled to connect to the sewer main in the immediate future.

annexed into the City of Billings. At that time, the City assumed responsibility for the existing wastewater treatment facility (WWTF) at Briarwood. Due to the age and condition of the WWTF, it was determined that conveyance of the sewage to the City system would be the most beneficial option for the City. Additionally, as the South Hills area develops, the proposed sewer line will enable the new areas to be served with City of Billings water and sewer. The City water system was extended into the area in 2004. When the South Hills area is fully developed, the projected wastewater flow will be 1,200,000 gallons per day. The City's main wastewater treatment facility has capacity of 26 million gallons per day. The South Hills wastewater flow will be approximately 5% of the main wastewater treatment facilities capacity.

The proposed sanitary sewer extension will extend from the existing City system near the intersection of South Billings Boulevard and the Frontage Road to the Briarwood wastewater treatment facility located near the entrance to the Briarwood Subdivision, a distance of approximately 14,300 feet. Approximately 7,260 linear feet of 18-inch diameter and 2,940 linear feet of 15-inch diameter "gravity flow" piping will be constructed from the Briarwood wastewater treatment facility to a new lift station that will be located near the existing City of Billings water booster station along Blue Creek Road. The lift station will pump wastewater approximately 7,400 feet to the existing City system in two 12-inch diameter "force main" pipes. All force main piping will include two 12-inch diameter pipes (a total of 14,800 linear feet of 12-inch piping). The force main will be connected to the underside of the existing bridge deck to cross the Yellowstone River. When above ground, the force main will be insulated to protect against freezing. The sewer main will be located within the Montana Department of Highway right-of-way and within permanent easements obtained from landowners. Additionally, some construction will require temporary construction easements from landowners. Acquisition of easements from eleven landowners will be required for construction of the sewer main. Approval to attach the sewer main to the underside of the bridge will come from the Montana Department of Highways. The new sewer system will be designed to meet state standards.

The State Revolving Fund (SRF) loan program will provide partial funding the project. Environmentally sensitive characteristics such as wetlands, floodplains, threatened or endangered species, and historical sites are not expected to be adversely impacted as a result of the proposed project. No significant long-term environmental impacts were identified.

Under Montana law, (75-6-112, MCA), no person, including a municipality, may construct, extend, or use a public sewage system until the DEQ has reviewed and approved the plans and specifications for the project. Under the Montana Water Pollution Control State Revolving Fund Act, the DEQ may loan money to municipalities for construction of public sewage systems.

The DEQ, Technical and Financial Assistance Bureau, has prepared this Environmental Assessment because the DEQ received a Preliminary Engineering Report (PER), contract documents (construction plans and specifications), and an application for a State Revolving Fund loan for the project.

The DEQ is currently reviewing this information. If complete, a written approval will be prepared and provided to the City. This EA has been prepared to satisfy

the requirements of the Montana Environmental Policy Act (MEPA) and the National Environmental Policy Act (NEPA).

D. COMMENT PERIOD

Thirty (30) calendar days

II. PURPOSE OF AND NEED FOR ACTION

The existing sewage treatment and disposal systems for the majority of the homes and businesses in the South Hills service area consist of individual on-site septic systems. The only subdivision in the service boundary that is served by a centralized sewer collection system and wastewater treatment facility is the Briarwood Subdivision (320 homes and 3 commercial customers). As noted above, the Briarwood wastewater treatment facility is owned and maintained by the City of Billings and is in poor condition. The facility is operating at, or over, the design capacity and therefore would require a significant upgrade to continue serving the existing subdivision and potentially add additional capacity (connections). Moreover, other currently developed areas in the South Hills area, such as the Cedar Park subdivision, would not gravity flow to the treatment facility, and the area adjacent to the treatment facility is developed with homes and therefore minimal area is available to expand the facility.

The current population in the service boundary is just over 1,000 people and is expected to reach 12,000 when the area is fully developed. See Figure 1 Project Map, located at the back of this EA.

III. ALTERNATIVES INCLUDING THE PROPOSED ACTION

- A. In addition to the No Action alternative, four gravity system alternatives and four gravity/force main alternatives were evaluated in the PER for addressing the need to extend the Briarwood sewer to the City system. As done in many projects in the preliminary stage, the alternative alignments discussed in the PER were conceptual and were done without the advantage of detailed field data on sites that are privately owned. Therefore, the alignment used in the final design is slightly different in some locations than any of the alignments discussed in the PER, and consequently some information presented in this EA is slightly different from the information provided in the PER.

Moreover, the PER considered numerous alternatives by dividing the proposed alignment into three sections (south of the Yellowstone River, crossing the Yellowstone River, and north of the Yellowstone River. Each of the "sections" included numerous routes and alternative designs. Due to the numerous short sections discussed in the PER, it was to some extent difficult to evaluate which overall alignment/design (combination of sections) would be the most advantageous (in terms of cost, constructability, environmental impacts, etc). Therefore, this EA combined several of the sections into eight feasible alignments that begin at the WWTF and continue to the City outfall. The alternative alignments evaluated include:

No Action Alternative

Alt. 1. No Action

Gravity Sewer Main Alternatives

- Alt. 2. Alignment near Blue Creek including gravity conveyance across Yellowstone River
- Alt. 3. Alignment near Blue Creek including inverted siphon across Yellowstone River
- Alt. 4. Alignment east of Highway 416 including gravity conveyance across Yellowstone River
- Alt. 5. Alignment east of Highway 416 including inverted siphon across Yellowstone River

Gravity Sewer Main and Force Main Alternatives

- Alt. 6. Gravity conveyance with alignment east of Highway 416 to Yellowstone River, sewer force main attached to underside of Highway 416 bridge, and force main to City system
- Alt. 7. Gravity conveyance with alignment east of Highway 416 to Yellowstone River, sewer force main located below riverbed using open-cut construction (trench excavation across riverbed), and force main to City system
- Alt. 8. Gravity conveyance with alignment east of Highway 416 to Yellowstone River, sewer force main located below riverbed by horizontal directional drilling under the riverbed, and force main to City system
- Alt. 9. Gravity conveyance with alignment east of Highway 416 to Yellowstone River, sewer force main located below riverbed by microtunneling under riverbed, and force main to City system

1. NO ACTION

Alternative 1 – No action. This alternative would include the continued use of the Briarwood wastewater treatment facility (WWTF). The WWTF consists of headworks, packaged oxidation ditch/clarifier, aerobic sludge digester, duplex aeration blowers, and ultra violet disinfection system. The facility discharges treated wastewater to a storage pond and water is then used to irrigate the Briarwood Golf Course. The facility is old and in poor condition. In August 2005 the wastewater flow rate exceeded the capacity of the facility. In addition to significant upgrades to provide additional capacity for the Briarwood Subdivision, costly upgrades would be required to increase treatment capacity before the City could provide sewer service to the South Hills area (outlying the Briarwood Subdivision). Several lift stations would be required to pump sewage to the WWTF due to topography in the service area. Growth in the South Hills area would be limited due to the cost of upgrading the WWTF and the lift stations. Additionally, because the land is already developed near the WWTF, upgrading would be difficult due to the limited area available. Moreover, the daily operation of the facility requires an operator to travel to and from the facility each day. The operation of satellite treatment plants is less efficient than a central treatment facility such as the City of Billings wastewater treatment plant. Therefore, improvements to the existing system were considered not feasible and this technology was not further evaluated.

2. GRAVITY SEWER SYSTEM

- a. Alternative 2 – Alignment near Blue Creek including gravity conveyance across Yellowstone River. This alignment begins at the north side of the Briarwood wastewater treatment facility (WWTF) and continues north (down gradient) closely following Blue Creek that runs through the Briarwood Golf Course. In this area, construction of the sewage main would include work in the floodplain and would include the removal of some trees and brush in a riparian area. Easements would need to be obtained to cross private property and would be more costly along the creek than other locations. A trail could be constructed on the easements, making this alignment a multi-use facility that would include the trail and roads for maintenance of the sewer line. The topography of the site in this area necessitates the sewer main follow along Blue Creek for approximately the first 4,000 feet (to Colleen Drive). Several crossings of Blue Creek and portions of the golf course will be required and may be done by boring or jacking to reduce some disturbances at the surface (Blue Creek and golf course amenities). See Figure 2 Alternate Routes Map, located at the back of this EA for the sewer line location discussed herein.

At Colleen Drive, the sewer main could be placed in one of two locations. This alternative considers the sewer main continue to follow along the west side of Blue Creek to where it intersects with Highway 416. This alignment would require several more easements from property owners and would require more work in the riparian area/floodplain than some alternatives discussed. Moreover, because the route along the creek is longer in this alternative than some of the other alternatives, the construction would be more difficult due to the soils and groundwater (along the creek). At Highway 416, the sewer main would then continue north (down gradient) along the east side of the highway to where it would cross the Yellowstone River. The crossing of Blue Creek at Highway 416 would likely be bored; therefore, the disturbance to Blue Creek at this location would be minimal. The sewer line would generally be located in the east right-of-way of the highway to just north of Midland Road (south of the Interstate 90 interchange). Just north of Midland Road, the sewer main would proceed northeast, generally following the frontage road right-of-way, to the existing City manhole (Frontage manhole 216-1). The outfall (invert elevation) of the new sewer main into this manhole controls whether this alternative is feasible, specifically the invert elevation of the pipe at the Yellowstone River and irrigation ditches is critical in the design. In addition to keeping an adequate grade of the pipe to maintain flow, obtaining cover to prevent freezing may also be critical.

A field survey at the proposed crossing of the Yellowstone determined the riverbed elevation to be approximately eleven feet below the design invert elevation of the pipe. Therefore, a gravity flow system would not be possible across the Yellowstone River. Moreover, although alignment of the pipe near Blue Creek would allow future users to tie into the sewer pipe, but the permits to construct in the floodplain and easement acquisition issues would be more expensive. Additionally, the environmental concerns such as tree and brush removal along the creek (riparian area) could be significant. Overall, this alignment would include numerous construction challenges. A gravity flow system near Blue

Creek with gravity crossing of the Yellowstone River was not feasible due to elevations differences and therefore this alternative was not further evaluated.

- b. Alternative 3 – Alignment near Blue Creek including inverted siphon across Yellowstone River. As discussed in Alternative 2, this alignment begins at the north side of the Briarwood wastewater treatment facility (WWTF) and continues north (down gradient) closely following Blue Creek to Highway 416. For a description of the impacts and the work required along Blue Creek and the golf course, please see the narrative discussed in Alternative 2. The crossing of Blue Creek at Highway 416 would likely be bored; therefore, the disturbance to Blue Creek at this location would be minimal. At Highway 416, the sewer main would then continue north (down gradient) along the east side of the highway, crossing the Yellowstone River using an inverted siphon, and generally routed down the east right-of-way of the highway to just north of Midland Road (south of the Interstate 90 interchange). Just north of Midland Road, the sewer main would proceed northeast, generally following the frontage road right-of-way, to the existing City manhole (Frontage manhole 216-1). See Figure 2 Alternate Routes Map, located at the back of this EA for the sewer line location discussed herein.

An inverted siphon could be used to convey sewage across the Yellowstone River as long as there is adequate head difference between the inlet and the outlet structures to overcome friction losses in the pipe. A detailed analysis was included in the PER and it was determined that an inverted siphon would convey the design flow if three pipes (barrels) were constructed (6, 8 and 12-inch). Some site constraints to use the inverted siphon included: limiting the gravity connection of some areas (Quanta and Bollinger subdivisions would require lift stations); and near the river, the riverbank would require some riprap (armor) facing to ensure stability. The inverted siphon could be constructed under the river using horizontal directional drilling (HDD), which, because of the three required pipes, would require three pipe crossings. The operation and maintenance of inverted siphons is higher than other options due to the need of more frequent cleaning. Other concerns with HDD include the loss drilling fluid, hitting large obstructions, line and grade deviation (tracking), collapse of the borehole, and failure of the down-hole tool.

As discussed in Alternative 2, alignment of the pipe near Blue Creek would allow future users to tie into the sewer pipe, but the permits to construct in the floodplain and easement acquisition issues would be more expensive. Additionally, the environmental concerns such as tree and brush removal along the creek (riparian area) could be significant. The horizontal directional drilling to place the inverted siphon piping includes numerous constructability and cost concerns. Overall, this alignment would include numerous construction challenges. A gravity flow system near Blue Creek with inverted siphon was not considered feasible and therefore this alternative was not further evaluated.

- c. Alternative 4 – Alignment east of Highway 416 including gravity conveyance across Yellowstone River. As discussed in Alternative 2 and

3, this alignment begins at the north side of the Briarwood wastewater treatment facility (WWTF) and continues north (down gradient) closely following Blue Creek that runs through the Briarwood Golf Course. For a description of the impacts and the work required along Blue Creek and the golf course, please see the narrative discussed in Alternative 2. The topography along Blue Creek necessitates the sewer main follow along Blue Creek for approximately the first 4,000 feet (to Colleen Drive). As in Alternative 2 and 3, several crossings of Blue Creek and portions of the golf course will be required and may be done by boring or jacking to reduce some disturbances at the surface (Blue Creek and golf course amenities). At Colleen Drive, which crosses Blue Creek and connects to Highway 416, the sewer line will be located in the right-of-way and follow Colleen Drive to Highway 416. The sewer main would then continue north (down gradient) along the east side of Highway 416, crossing the Yellowstone River and generally routed down the east right-of-way of the highway to just north of Midland Road (south of the Interstate 90 interchange). The crossing of Blue Creek at Highway 416 would likely be bored; therefore, the disturbance to Blue Creek at this location would be minimal. See Figure 2 Alternate Routes Map, located at the back of this EA for the sewer line location discussed herein. Just north of Midland Road, the sewer main would proceed northeast, generally following the frontage road right-of-way, to the existing City manhole (Frontage manhole 216-1). The outfall (invert elevation) of the new sewer main into this manhole controls whether this alternative is feasible, specifically the invert elevation of the pipe at the Yellowstone River and irrigation ditches is critical in the design. In addition to keeping an adequate grade of the pipe to maintain flow, obtaining cover to prevent freezing may also be critical.

A field survey at the proposed crossing of the Yellowstone River determined the riverbed elevation to be approximately eleven feet below the design invert elevation of the pipe. Therefore, a gravity flow system would not be possible across the Yellowstone River. The construction of a sewer main along Blue Creek and east of Highway 416 would not affect Blue Creek as much as Alternative 2 and 3. However, when compared to Alternatives 2 and 3, where the sewer pipe alignment is near Blue Creek until it intersects Highway 416, it would allow future users to tie into the sewer pipe, but the permits to construct in the floodplain and easement acquisition issues would be less expensive due to the shorter alignment along Blue Creek. Additionally, the environmental concerns such as tree and brush removal along the creek (riparian area) would be less significant (than Alternatives 2 and 3). Overall, the alignment that included placing the sewer main along Highway 416 was considered more feasible and included less construction challenges. However, a gravity flow system east of Highway 416 with gravity flow across the Yellowstone River was not considered feasible and therefore this alternative was not further evaluated.

- d. Alternative 5 – Alignment east of Highway 416 including inverted siphon across Yellowstone River. As discussed in Alternative 4, this alignment begins at the north side of the Briarwood wastewater treatment facility (WWTF) and continues north (down gradient) closely following Blue

Creek to Colleen Drive (approximately 4,000 feet). For a description of the impacts and the work required along Blue Creek and the golf course from the WWTF to Colleen Drive, please see the narrative discussed in Alternative 4. Please see Figure 2 Alternate Routes Map, located at the back of this EA for the sewer line location discussed herein. The crossing of Blue Creek at Highway 416 would likely be bored; therefore, the disturbance to Blue Creek at this location would be minimal. The sewer main would then continue north (down gradient) along the east side of Highway 416, crossing the Yellowstone River using an inverted siphon and generally routed down the east right-of-way of the highway to just north of Midland Road (south of the Interstate 90 interchange). Just north of Midland Road, the sewer main would proceed northeast, generally following the frontage road right-of-way, to the existing City manhole (Frontage manhole 216-1). The outfall (invert elevation) of the new sewer main into this manhole controls whether this alternative is feasible, specifically the invert elevation of the pipe at the Yellowstone River and irrigation ditches is critical in the design. In addition to keeping an adequate grade of the pipe to maintain flow, obtaining cover to prevent freezing may also be critical.

An inverted siphon could be used to convey sewage across the Yellowstone River as long as there is adequate head difference between the inlet and the outlet structures to overcome friction losses in the pipe. A detailed analysis was included in the PER and determined that an inverted siphon would convey the design flow if three pipes (barrels) were constructed (6, 8 and 12-inch). Some site constraints to use the inverted siphon included; limiting the connection of some areas (Quanta and Bollinger subdivisions without lift stations) and near the river, the riverbank would require some riprap (armor) facing to ensure stability. The inverted siphon could be constructed under the river using horizontal directional drilling (HDD). Each of the three required pipes would be encased in three casing pipes, which would require three pipe crossings. The operation and maintenance of inverted siphons is higher than other options due to the need of more frequent cleaning. There are some concerns with HDD, including losing drilling fluid, hitting large obstructions, line and grade deviation (tracking), collapse of the borehole, and failure of the downhole tool.

The construction of a sewer main along Blue Creek and east of Highway 416 would not affect Blue Creek as much as Alternative 2 and 3. However, when compared to Alternatives 2 and 3, where the sewer pipe alignment is near Blue Creek until it intersects Highway 416, it would allow future users to tie into the sewer pipe, but the permits to construct in the floodplain and easement acquisition issues would be less expensive. Additionally, the environmental concerns such as tree and brush removal along the creek (riparian area) would be less significant than Alternatives 2 and 3. Overall, the alignment along Highway 416 included less construction challenges than Alternatives 2 and 3. The horizontal directional drilling to place the inverted siphon piping includes numerous constructability and cost concerns, but placing the sewer main in the location east of Highway 416, instead of placing it all along Blue Creek, with inverted siphon was considered more feasible than Alternatives 2

and 3.

This alternative is feasible and will be further evaluated.

3. GRAVITY SEWER AND FORCE MAIN SYSTEMS

- a. Alternative 6 – Gravity sewer main with alignment east of Highway 416 to Yellowstone River, sewer force main attached to underside of the Highway 416 bridge, and force main to City system. As discussed in Alternatives 4 and 5, this alignment begins at the north side of the Briarwood wastewater treatment facility (WWTF) and continues north (down gradient) closely following Blue Creek to Colleen Drive (approximately 4,000 feet). For a description of the impacts and the work required along Blue Creek and the golf course from the WWTF to Colleen Drive, please see the narrative discussed in Alternative 4. Please see Figure 2 Alternate Routes Map, located at the back of this EA for the sewer line location discussed herein. The crossing of Blue Creek at Highway 416 would likely be bored; therefore, the disturbance to Blue Creek at this location would be minimal. The sewer main would then continue north along the east side of Highway 416 (down gradient) to a lift station to be located south the Blue Basket convenience store (south of the Yellowstone River) on City property. The City purchased this property in 2006 to locate the lift station for this project.

With this alternative, the lift station would pump the sewage through two 12-inch diameter force main pipes that would be attached to the underside of the existing bridge crossing the Yellowstone River. The force main piping would continue to the north using new and existing “dry” force main piping (two 12-inch pipes) to the existing City manhole (Frontage manhole 216-1). Other than the existing dry piping (which is almost 2,200 feet long), the piping would generally be routed down the east right-of-way of the highway to just north of Midland Road (south of the Interstate 90 interchange). North of Midland Road, the force main piping would proceed northeast, generally following the frontage road right-of-way, to the existing City manhole (Frontage manhole 216-1). See Figure 3 located at the back of this EA.

Installing the force main on the bridge will be acceptable to the Montana Department of Transportation (MDT) if there is adequate capacity on the bridge and the design for the force main meets their standards. However, by adding the sewer main on the bridge, there would be no ability to add another waterline at a later time. Securing utilities to the underside of bridges is common practice and the MDT has allowed other utilities to be located on this bridge. The PER did not indicate environmental impacts due to the force main construction. Because the force main would cross the river and continue on the north side of the river to the existing City manhole, connections from future users would have to utilize lift stations or install a parallel gravity line to the City manhole. The over all capital cost for this alternative is less than the other alternatives considered. See the following section regarding costs.

This alternative is feasible and will be further evaluated.

- b. Alternative 7 – Gravity sewer main with alignment east of Highway 416 to Yellowstone River, sewer force main located below riverbed using open-cut construction (trench excavation across river bed), and force main to City system. As discussed in Alternatives 4 through 6, this alignment begins at the north side of the Briarwood wastewater treatment facility (WWTF) and continues north (down gradient) closely following Blue Creek to Colleen Drive (approximately 4,000 feet). For a description of the impacts and the work required along Blue Creek and the golf course from the WWTF to Colleen Drive, please see the narrative discussed in Alternative 4. The crossing of Blue Creek at Highway 416 would likely be bored; therefore, the disturbance to Blue Creek at this location would be minimal. Please see Figure 2 Alternate Routes Map, located at the back of this EA for the sewer line location discussed herein. As discussed in Alternatives 6 and 7, the sewer main would then continue north along the east side of Highway 416 (down gradient) to a lift station to be located south the Blue Basket convenience store (south of the Yellowstone River) on City property.

In this alternative, the lift station would pump the sewage through two 12-inch diameter force main pipes that would be constructed below the riverbed using open-cut construction (trench) to cross the Yellowstone River. As discussed in Alternative 6, once across the river, the force main piping would continue to the north using new and existing “dry” force main piping (two 12-inch pipes) to the existing City manhole (Frontage manhole 216-1).

An advantage of the open-cut construction would be that there would be room on the underside of the bridge for a future waterline, however open-cut construction would require permits for in-stream environmental impacts and the construction would require extensive bank reconstruction. Construction would entail river diversions or coffer dams. The level of difficulty for this type of construction demonstrated that this alternative was not feasible and therefore this alternative was not further evaluated.

- c. Alternative 8 – Gravity sewer main with alignment east of Highway 416 to Yellowstone River, sewer main located below riverbed by horizontal directional drilling under the riverbed, and force main to City system. As discussed in Alternatives 4 through 7, this alignment begins at the north side of the Briarwood wastewater treatment facility (WWTF) and continues north (down gradient) closely following Blue Creek to Colleen Drive (approximately 4,000 feet). For a description of the impacts and the work required along Blue Creek and the golf course from the WWTF to Colleen Drive, please see the narrative discussed in Alternative 4. Please see Figure 2 Alternate Routes Map, located at the back of this EA for the sewer line location discussed herein. The crossing of Blue Creek at Highway 416 would likely be bored; therefore, the disturbance to Blue Creek at this location would be minimal. As discussed in Alternatives 6 and 7, the sewer main would then continue north along the east side of Highway 416 (down gradient) to a lift station to be located south the Blue

Basket convenience store (south of the Yellowstone River) on City property.

With this alternative, the lift station would pump the sewage through two 12-inch diameter force main piping that would be constructed under the river using horizontal directional drilling (HDD). Each of the two 12-inch force mains would be encased in 18-inch casing pipes, which would require two HDD river crossings because of the two force main pipes. The PER considered trenchless construction using one casing (30-inch or larger) to protect the two 12-inch force mains, but quickly determined that using HDD to place a 30-inch casing would be pushing the limits of HDD, and would therefore be high risk construction.

As discussed in Alternatives 6 through 7, once across the river, the force main piping would continue to the north using new and existing “dry” force main piping (two 12-inch pipes) to the existing City manhole (Frontage manhole 216-1).

Advantages of the HDD construction would be that there would be room on the underside of the bridge for a future waterline and the environmental impacts would be limited to the beginning and ending points of the drillings. River flow would not be impacted, so wildlife and fisheries would not be impacted. There are some concerns with HDD, including losing drilling fluid, hitting large obstructions, line and grade deviation (tracking), collapse of the borehole, and failure of the downhole tool.

This alternative is feasible and will be further evaluated.

- d. Alternative 9 – Gravity sewer main with alignment east of Highway 416 to Yellowstone River, sewer main located below the riverbed by microtunneling under the riverbed, and force main to City system. As discussed in Alternative 4 through 8, this alignment begins at the north side of the Briarwood wastewater treatment facility (WWTF) and continues north (down gradient) closely following Blue Creek to Colleen Drive (approximately 4,000 feet). For a description of the impacts and the work required along Blue Creek and the golf course from the WWTF to Colleen Drive, please see the narrative discussed in Alternative 4. Please see Figure 2 Alternate Routes Map, located at the back of this EA for the sewer line location discussed herein. The crossing of Blue Creek at Highway 416 would likely be bored; therefore, the disturbance to Blue Creek at this location would be minimal. As discussed in Alternatives 6 through 8, the sewer main would then continue north along the east side of Highway 416 (down gradient) to a lift station to be located south the Blue Basket convenience store (south of the Yellowstone River) on City property.

With this alternative, the lift station would pump the sewage through two 12-inch diameter force main pipes that would be constructed under the river using horizontal micro-tunneling technology. Each of the two 12-inch force mains would be encased in 18-inch casing pipes, which would require two river crossings because of the two force mains pipes. The

PER considered microtunneling using one casing (30-inch or larger) to protect the two 12-inch force mains, but quickly determined that using microtunneling to place one 30-inch casing would be pushing the limits of microtunneling technology and therefore would be high risk construction.

As discussed in Alternatives 6 through 8, once across the river, the force main piping would continue to the north using new and existing “dry” force main piping (two 12-inch pipes) to the existing City manhole (Frontage manhole 216-1).

Advantages of the HDD construction would be that there would be room on the underside of the bridge for a future waterline and the environmental impacts would be limited to the beginning and ending points of the drillings. River flow would not be impacted, so wildlife and fisheries would not be impacted. There are some concerns with HDD, including losing drilling fluid, hitting large obstructions, line and grade deviation (tracking), collapse of the bore hole, and failure of the downhole tool.

This alternative was not further evaluated.

B. COST COMPARISON FOR TREATMENT **FEASIBLE** ALTERNATIVES
PRESENT WORTH ANALYSIS

The present worth analysis is a means of comparing alternatives in present day dollars and can be used to determine the most cost-effective alternative.

An interest rate of 6.0% over the 20-year planning period was used in the analysis. Table 1 provides a summary of the present worth analysis of alternatives considered to be feasible.

**TABLE 1
ECONOMIC EVALUATION OF COLLECTION ALTERNATIVES**

ITEM	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6	ALT 7	ALT 8	ALT 9
	No Action	Gravity Sewer Main from WWTP to City System				Gravity Sewer Main to South of Yellowstone River and Lift Station/Force Main			
		Alignment Near Blue Creek to Highway 416, Along Highway 416 to City System		Alignment Near Blue Creek in Golf Course (4,000') to Colleen Drive, Follow Colleen Drive to Highway 416, Along Highway 416		(Alignment Near Blue Creek for 4,000' to Colleen Drive, follow Colleen Drive to Highway 416, Along Highway 416 to City System)			
		Gravity Conveyance Across Yellowstone River	Inverted Siphon (gravity) Across Yellowstone River	Gravity Conveyance Across Yellowstone River	Inverted Siphon (gravity) Across Yellowstone River	Force Main Attached to Underside of Highway 416 Bridge	Force Main Located Below River Bed		
							Open-Cut Construction Across River	Drill Under River Bed	Tunnel Under River Bed
Capitol Costs	N/A	N/A	N/A	N/A	\$3,389,791	\$2,507,142	N/A	\$2,752,942	N/A
Annual O&M Cost	N/A	N/A	N/A	N/A	\$17,472	\$7,064	N/A	\$7,064	N/A
20 Year Salvage Value	N/A	N/A	N/A	N/A	\$0	\$0	N/A	\$0	N/A
Present Worth of Salvage Value (6%)	N/A	N/A	N/A	N/A	\$0	\$0	N/A	\$0	N/A
Present Worth of Annual O&M Costs (6%)	N/A	N/A	N/A	N/A	\$200,402	\$86,028	N/A	\$86,028	N/A
Present Worth Cost*	N/A	N/A	N/A	N/A	\$3,590,193	\$2,593,170	N/A	\$2,838,970	N/A

* Costs provided for only the alternatives considered feasible.

IV. AFFECTED ENVIRONMENT

A. PLANNING AREA

A South Hills Planning Area was identified in the South Hills Planning Study Water and Sewer Improvements (Study) that was completed in April 2004 by Interstate Engineering. The South Hills Planning Area evaluated in the Study included approximately 1,300 acres and an estimated population of just over 1,000 persons. The City of Billings added an additional 1,700 acres to the 2004 service area based on credible interest in development of the South Hills area to provide a 3,000 acre service area for the South Hills Trunk Sewer Main project. The service area includes the Briarwood Subdivision, which currently has a collection and treatment system, as well as many existing developed areas that rely on individual on-site septic systems. Areas that rely on individual on-site septic systems include Cedar Park Water District and Quanta, Bolinger, Aquista, Blain's Trailer Court, and Blue Creek Acreage subdivisions.

Included within the service area are a significant number of land parcels that are currently unplatted or have been subdivided by Certificate of Survey. The sewer main system will be sized to accommodate flows from these unplatted areas so as these areas are developed, sewer service can be extended. See Figure 4 Service Area, located at the back of this EA.

Construction is scheduled to begin in the fall of 2006.

B. FLOW PROJECTIONS

The City of Billings used a 50-year planning period for the South Hills study area. According to the PER, within 50 years all undeveloped parcels within the service area will be developed and all wastewater generated within the service area will be entering the proposed trunk sewer main. The future population will be 12,000 people, which is estimated to produce an average day flow of 1.2 million gallons per day (MGD) and a peak flow rate of 3.6 MGD (based on Circular DEQ 2 11.243).

The City of Billings main wastewater treatment facility has a hydraulic design capacity of 26 MGD (average flow) and currently handles 17 MGD. The highest recorded flow was on July 10, 2005 and was 25.9 MGD. The facility has a flow capacity of 40 MGD. The initial flow from this project will be approximately 0.08 MGD, and will increase in direct proportion to the population growth to 1.2 MGD anticipated in 50 years. This equals approximately 5% of the current design capacity of the main Billings wastewater treatment facility.

C. NATURAL FEATURES

Soils: The soils in the project area consist of Haverson series, Lohmiller series, and Alluvial land. The Haverson and Lohmiller soils are calcareous soils that are formed in loamy (Haverson) and clayey (Lohmiller) alluvium in flood plains, terraces, and fans. Permeability is moderate-slow to moderate and both formations characteristically have finer grained soils over coarser soils. Both soil types can be used for dry and irrigated farming. The Alluvial Land is characterized by gravelly loam over loose gravelly sand alluvium. Alluvium soils

generally have shallow water tables, in many cases around three feet below the ground surface. This land has no value for farming and is only suitable as range.

The farmable land on the portion of the project south of the Yellowstone River generally lies in the Blue Creek bottomlands and is predominantly utilized as pastureland. The area of the project north of the Yellowstone River is farmland, but this project will not affect the end use of the farmable land.

Geology/Groundwater: The geology of the project area can be generally categorized into three distinct geologic areas: bottomland adjacent to Blue Creek; bench lands located above Blue Creek; and the Yellowstone River Valley. The Blue Creek Bottomland consists of approximately 7 to 15 feet of fine grained material over sand and gravel. Shallow groundwater is expected and is typically encountered near the interface of the sand and gravel. The Blue Creek Bench consists of approximately 4.5 to 16.5 feet of fine grained material over shale bedrock. Groundwater is expected to be below the proposed construction in the Blue Creek Bench soils. The Blue Creek Bench lands generally slope toward Blue Creek, which generally flows north to the Yellowstone River. Material in the Yellowstone River Valley consists of approximately 0.5 to 4 feet of fine grained material over dense alluvial deposits. Groundwater would be expected at the river elevation in the Yellowstone River Valley. Static water level measurements in the service area indicate typical groundwater depths from 7 to 18 feet. The project area north of the Yellowstone River is relatively flat and generally drains south to the Yellowstone River.

Climate, temperature and precipitation: The Billings area climate is consistent with a semi-arid desert plain. The average minimum temperature of 11.9 degrees occurs in January and the average maximum temperature of 89.0 degrees occurs in July. The winter temperatures in the project area are generally milder than the surrounding area due to Chinook winds in the area and the temperature effects of the Yellowstone River valley. The average precipitation is just over 13 inches, with an average of 26.3 inches of snowfall per year.

Surface Water: According to the 2004 Montana Water Quality Report (federal Clean Water Act and the Montana Water Quality Act), the Yellowstone River, where Blue Creek enters the river is classified as a B-2 waterbody. Waters classified as B-2 are suitable for drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming and recreation; growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial water supply. The Yellowstone River in the vicinity of the Billings Wastewater Treatment Facility is classified as B-3. Waters classified as B-3 are similar to B-2 and include salmonid fishes. Blue Creek has not been classified.

D. MAPS

Figure 1 shows the project area, which generally shows the Briarwood Subdivision, the area to be immediately served by the proposed sewer main. Figure 2 depicts the alternative alignments evaluated, which are located south of the Yellowstone River and the numerous properties (private lots) the sewer main will cross. Figure 3 depicts the alternative alignments evaluated on the north side of the Yellowstone River. The base map for Figure 3 includes an aerial

photo, which show structures (buildings and bridges), the river, lakes, vegetation, etc. Figure 4 depict the service area boundary of South Hills planning area. The South Hills service area includes approximately 3,000 acres that could develop in the next 50 years.

V. ENVIRONMENTAL IMPACTS OF PROPOSED PROJECT

A. DIRECT AND INDIRECT ENVIRONMENTAL IMPACTS

1. Land Use – The predominant land use in the 3,000 acre service area is undeveloped rangeland, consisting mostly of raw land with a brush cover (45%). However, the undeveloped area also includes crop/pastures and evergreen forest at approximately 20% of the area each. Approximately 15% of the service area is developed as residential and commercial area (currently less than 1% is commercial area).

There are no light industrial or manufacturing areas in the service area. The service area is undergoing rapid growth and future growth is expected to continue. Several properties have experienced on-site wastewater problems and been limited in design and construction due to high ground water.

The collection system will be constructed along the existing road right-of-way and through easements obtained from private property owners.

The lift station will be located on property owned by the City and the force main piping will be connected to the underside of the bridge (owned by the Montana Department of Transportation).

Farmland and rangeland soils may potentially be affected by development that may occur after the sewer main is constructed.

2. Floodplains and Wetlands – After consulting the Department of Natural Resources and Conservation (DNRC), it was determined that the project does not appear to be located in the designated 100-year floodplain. Therefore, no floodplain permit is required and this project will be in compliance with the Flood Disaster Protection Act of 1973, the NFIP and EO 11988 and 11296. The Uniform Environmental Checklist (provided by the City) indicated no impacts would be made to wetlands. The proposed construction may impact wetlands, but the City has indicated that disturbed areas will be re-vegetated. Best management practices will be implemented to restrict surface runoff (silt fences, rock check dams, etc).
3. Cultural Resources – The Montana State Historic Preservation Office (SHPO) considered the impacts of the proposed project on historical sites and cultural resources. According to the SHPO there are previously recorded sites, as well as previously conducted cultural resource inventories in the project area. SHPO recommended consulting the Yellowstone Historical Board. The Yellowstone Historical Board indicated they had no concerns with the project. Therefore, the Yellowstone Historical Board and SHPO did not recommend a cultural resource inventory be conducted at this time. .

4. Fish and Wildlife - Animal life will not be significantly affected by the proposed project. The project will not affect any wildlife habitats, nor will any known endangered species be affected. The proposed project has water quality benefits that may protect and reduce the risk of harm to fisheries and other animals.
5. Water Quality - Water quality in the area may improve due to the proposed project. Eliminating the use of on-site septic systems may result in the reduction of pathogen and nutrient loadings to groundwater in the service area.
6. Air Quality - Short-term negative impacts on air quality will occur during construction from heavy equipment in the form of dust and exhaust fumes. Proper construction practices will minimize this problem. Project specifications will require dust control.
7. Public Health - Public health will not be negatively affected by the project. The project will eliminate the use of existing on-site septic systems and the aging Briarwood wastewater treatment facility. Moreover, the project will eliminate future construction of on-site septic systems. The Billings wastewater treatment facility provides excellent sewage treatment, which will reduce the potential to pollute ground and surface waters in the service area.
8. Energy – The project will have a minimal long-term affect on energy consumption, as the lift station will require power.
9. Noise - Short-term impacts from excessive noise levels may occur during the construction activities. The construction period will be limited to normal daytime hours to avoid early morning or late evening construction disturbances. No significant long-term impacts from noise will occur.
10. Sludge Disposal. The sludge from the Briarwood wastewater treatment plant will be disposed of at the local landfill (same location City of Billings disposes all their sludge).
11. Growth. Improvements of the wastewater collection system may result in minor secondary impacts that are associated with the growth of the community. These can include housing and commercial development, agricultural lands, solid waste, transportation and utilities. Construction of central collection system may promote more dense development than currently exists. Future density, however, can be controlled with proper zoning. Traffic volumes and population will increase in the area as the area is developed. The City of Billings planning division should manage the development in the area through the subdivision process. The City of Billings planning division is responsible for the current planning, long range planning and transportation planning in the community. The planning division provides planning and development services that include the review of subdivisions and administers the zoning regulations for the City of Billings. The planning department also is responsible for transportation planning for the Billings urban area. Currently, the

population to be served is approximately 1,000 people. It is estimated that the service area could increase to 12,000 people when the area is fully developed.

12. Cumulative Effects. No significant environmental adverse impacts are anticipated. Serving the Briarwood wastewater system, other existing residences and subdivisions, and serving new growth areas will convey wastewater to the City of Billings wastewater treatment facility, which will most likely provide better wastewater treatment than individual septic tanks/subsurface disposal systems. Without the proposed project, the service area would most likely be developed using septic tanks/subsurface disposal systems to treat the wastewater (other than the Briarwood Subdivision). It is believed that the cumulative impacts of many old and substandard septic systems on groundwater and surface water may be significant and that by putting wastewater into sewers where a wastewater treatment plant can treat the wastewater using better/new technologies that groundwater and surface water quality may not experience degradation.

B. UNAVOIDABLE ADVERSE IMPACTS

Short-term construction related impacts (i.e., noise, dust, traffic disruption, etc.) will occur, but should be minimized through proper construction management. Energy consumption during construction cannot be avoided. Vegetation and soils removed for construction will be restored with similar soils. Topsoil will be replaced to similar grades and thickness that existed prior to the work. Vegetated areas disturbed by the work will be re-seeded.

VI. PUBLIC PARTICIPATION

On February 14, 2005, a public hearing was held as part of the City's Capital Improvement Plan. The City Council adopted the Capital Improvement Plan, which included this project, on February 28, 2005.

Three public meetings have been held for this project at the Blue Creek School, which is inside the service area boundary. The first public meeting was held on April 18, 2005, the second meeting held on August 25, 2005, and the third meeting was held October 18, 2005. Invitation letters were sent to property owners immediately adjacent to the sewer main route to advertise the third public meeting. The first meeting was advertised in the Billings Times and the second meeting was advertised in the Billings Gazette.

At the April 18, 2005 public meeting, the need for the project and recommended alternatives were discussed. The project schedule, cost estimates for the project, and impacts on rates and assessments were presented. During the August 25 and October 18 public meetings, drawings of the proposed project were presented and residents were given the chance to review and ask questions. The proposal to place a multi-use path along the sewer route was strongly opposed by the landowners, and therefore that use was abandoned.

VII. REFERENCE DOCUMENTS

The following documents have been utilized in the environmental review of this project and are considered to be part of the project file:

1. Design Study (Preliminary Engineering Report) for Billings Public Works Department Engineering Division, July 2005 prepared by Morrison Maierle, Inc, Billings, Montana and the City of Billings, with addendum, dated March 6, 2006 prepared by the City of Billings.
2. Uniform Application Form for Montana Public Facility Projects for Briarwood Sewer Main Extension, October 2005 prepared by the City of Billings.

VIII. AGENCIES CONSULTED

The following agencies have been contacted in regard to the proposed construction of this project:

1. The Montana Fish, Wildlife, and Parks reviewed the proposed project and determined that there are no threats to fisheries habitat.
2. The U.S. Fish and Wildlife Service reviewed the proposed project and determined that no federally listed species or designated critical habitat occurs within the project area.
3. The Montana State Historic Preservation Office (SHPO) considered the impacts of the proposed project on historical sites and cultural resources. According to the SHPO there are previously recorded sites, as well as previously conducted cultural resource inventories in the project area. SHPO recommended consulting the Yellowstone Historical Board. The Yellowstone Historical Board indicated they had no concerns with the project. Therefore, the Yellowstone Historical Board and SHPO did not recommend a cultural resource inventory be conducted at this time.
4. The Department of the Army Corps of Engineers commented on the proposed project. The Corps of Engineers is responsible for administering Section 404 of the Clean Water Act and the Federal Rivers and Harbors Act (Section 10 Permit). The Section 404 permit regulates the excavation or placement of dredged or fill material below the ordinary high water mark of our nation's rivers, streams, lakes or in wetlands. The Section 10 permit administers the construction of any structures in or over any federally listed navigable water of the United States, the excavation from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters. The Corps has indicated that a Section 10 permit would likely be required, but would review the application once final plans and application have been prepared and submitted to the Corps. A Nationwide Permit 12 will be required for the utility line work. Access roads and trench backfill will be graded as close as possible to preconstruction contours and elevations. If wetland areas are disturbed, the top 6" to 12" of trench will be backfilled with topsoil from the trench excavation. Furthermore, the trench will be constructed in such a manner as to not drain the water. Methods such as clay blocks may be used in the

trench backfill to restrict water movement. Any exposed slopes and stream banks will be stabilized immediately.

5. The Department of Natural Resources and Conservation (DNRC) commented on the proposed project. They indicated that the project does not appear to be located in the designated 100-year floodplain. Therefore, no floodplain permit is required and this project will be in compliance with the Flood Disaster Protection Act of 1973, the NFIP and EO 11988 and 11296.

IX. AGENCY ACTION, APPLICABLE REGULATIONS AND PERMITTING AUTHORITIES

No additional permits will be required from the State Revolving Fund (SRF) section of the DEQ for this project after the review of the submitted plans and specifications. However, coverage under the stormwater general discharge permit is required from the DEQ Water Protection Bureau prior to the beginning of construction.

X. RECOMMENDATION FOR FURTHER ENVIRONMENTAL ANALYSIS

☐ EIS ☐ More Detailed EA ☒ No Further Analysis

Rationale for Recommendation: Through this EA, the DEQ has verified that none of the adverse impacts of the proposed Briarwood Sewer Extension project are significant. Therefore, an environmental impact statement is not required. The environmental review was conducted in accordance with the Administrative Rules of Montana (ARM) 17.4.607, 17.4.608, 17.4.609, and 17.4.610. The EA is the appropriate level of analysis because none of the adverse effects of the impacts are significant.

EA Prepared by:

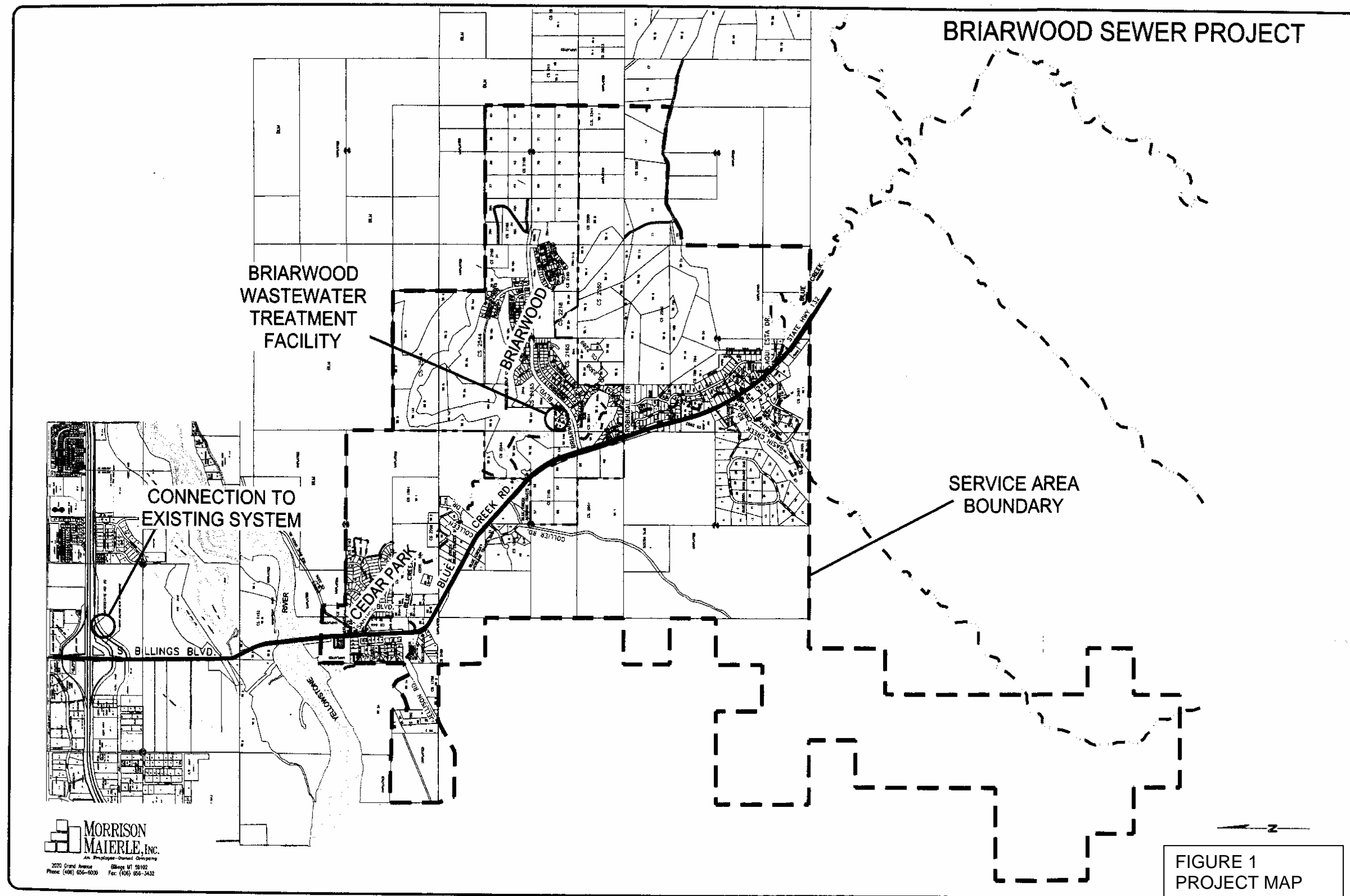
Jerry Paddock, P.E.

Date

Approved By:

Todd Teegarden, P.E.

Date



[illegible]

FIGURE 2
ALTERNATE ROUTES REVIEWED
SOUTH OF THE YELLOWSTONE RIVER

BRIARWOOD SEWER PROJECT

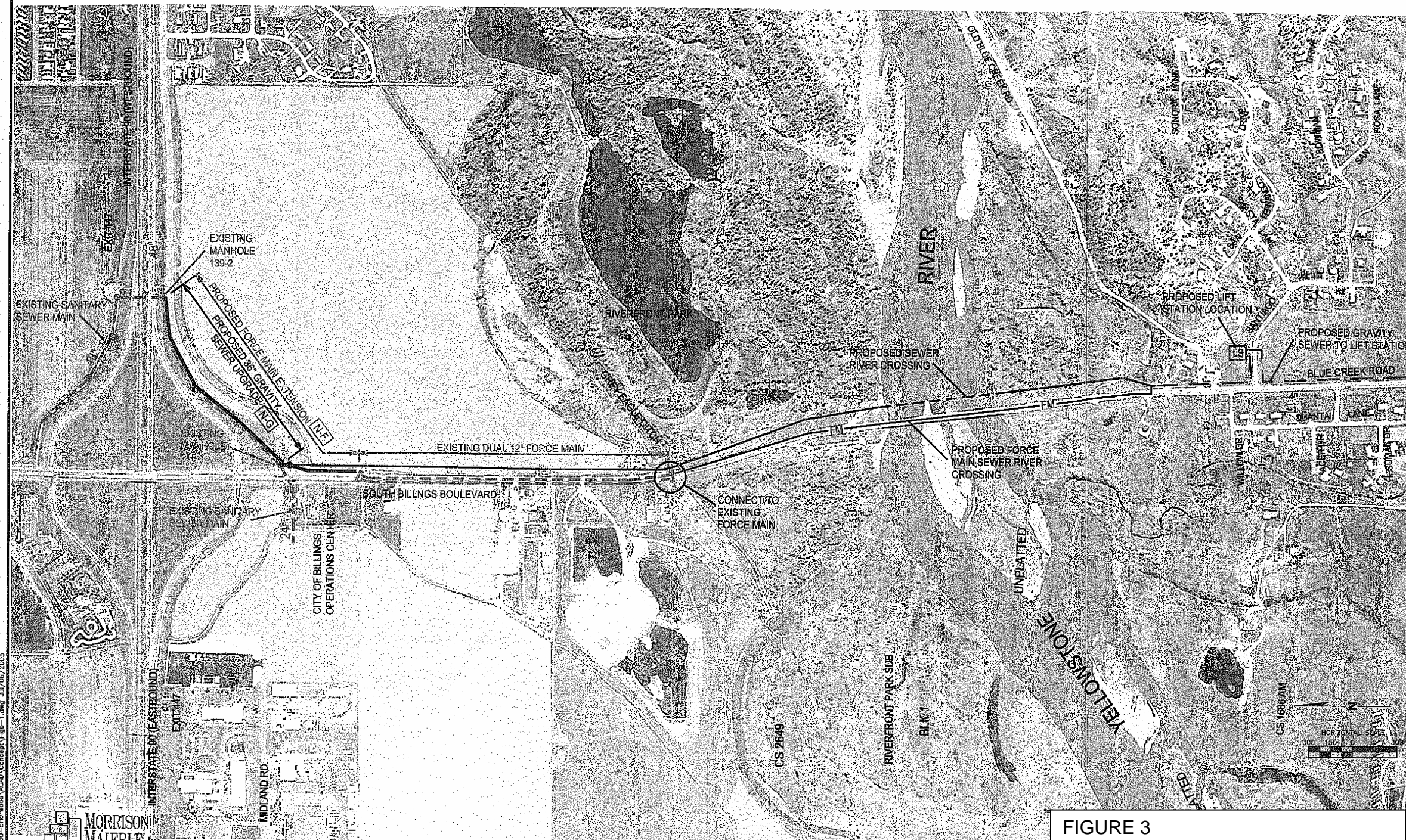


FIGURE 3
ALTERNATIVE ROUTES REVIEWED
NORTH OF YELLOWSTONE RIVER

BRIARWOOD SEWER PROJECT

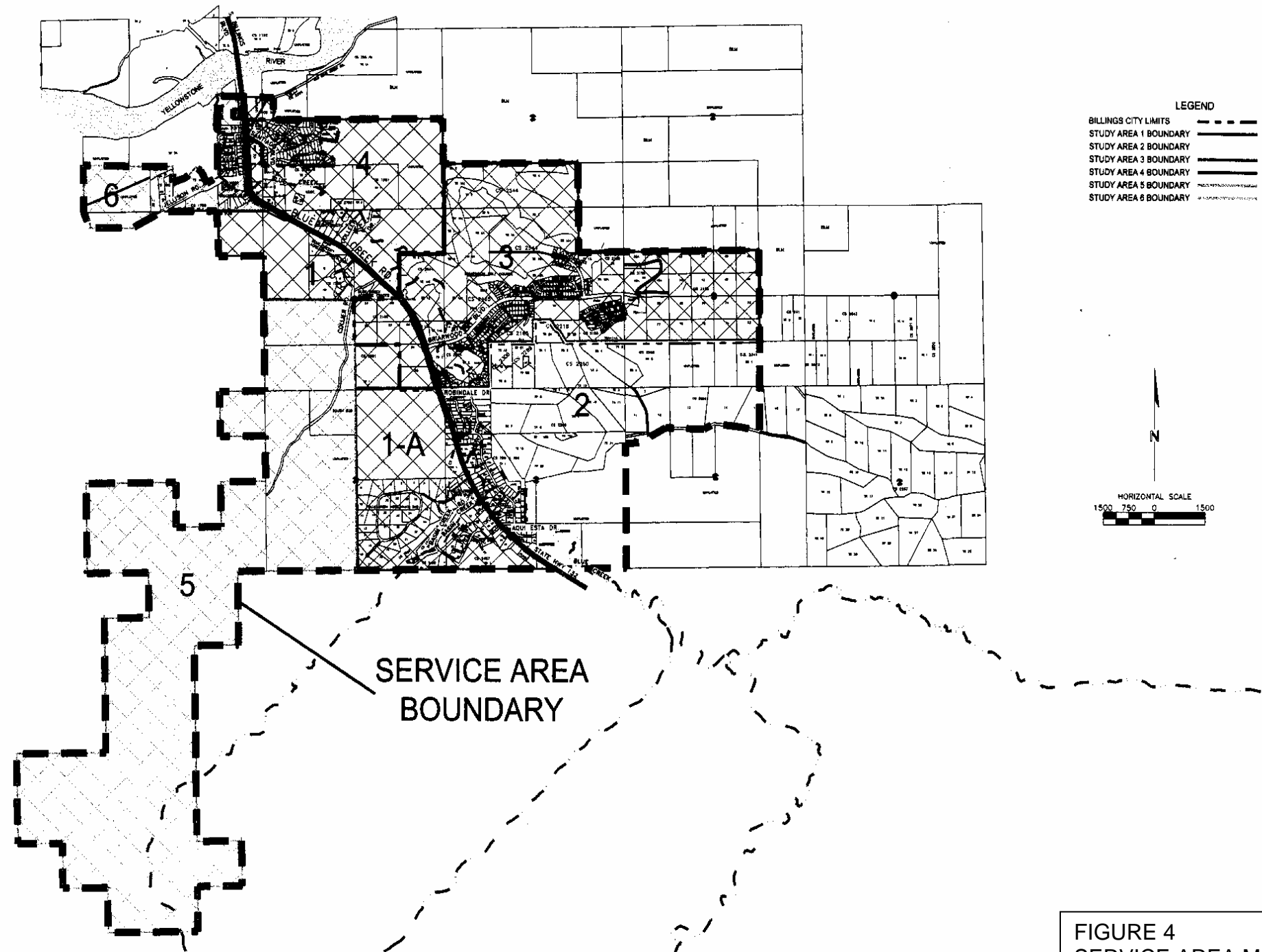


FIGURE 4
SERVICE AREA MAP

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